

## REMARKS

1. The claims of this application have been amended to specify that the fixed bed reactors of the original fixed bed unit are all replaced by moving bed reactors. To do this, the features of claim 5 have been incorporated into claim 1 with a similar amendment in claim 18. Claims 1 and 18 have also been amended to specify that the converted unit does not have a dedicated, i.e. integrated, regenerator, which is the objective of the invention (terminology taken from Section 0008 of the specification). Claim 5 has accordingly been cancelled. Claims 18 and 20 have been brought into line with claim 1 in specifying that the reactors of the moving bed unit are connected for charge and catalyst flow from one reactor to the next.

Claim 6 has been corrected.

Claim 8 has been amended to specify a post-conversion pressure range based on the pressures specified in original claims 9 and 10 and in consequence, claim 9 is cancelled.

2. This application relates to a method for converting a fixed-bed catalytic reformer unit to a moving-bed unit. The fixed bed reactor which, in the manner typical of moving bed reactors, comprises a number of individual reactors serial connected for hydrocarbon (naphtha) flow through the beds of catalyst contained in the reactor vessels, is converted to a moving bed reactor that has continuous or intermittent catalyst feeding facilities to allow continuous or intermittent addition of fresh or regenerated catalyst to the catalyst inlet of the moving-bed reactor and continuous or intermittent removal of spent catalyst from the catalyst outlet of the moving-bed reactor. The spent catalyst removed from the reactor is regenerated in a non-integrated regenerator which may be an offsite regenerator, a centrally located on-site regenerator which serves several reforming units or a regenerator shared with a second moving bed unit. The moving-bed reactor, the catalyst feeding facilities and the catalyst recovery facilities are operatively connected between themselves and to existing facilities from the fixed bed unit, such as piping, compression and reformer charge handling and heating. The converted unit is operated at an effective reactor pressure to improve reformate quality and yield over the reformate product from the fixed-bed unit before the conversion. Typically, this reactor pressure will be lower than that of the fixed bed unit whose

reactors have been replaced but lower than the pressure which would be used in a full conversion to a continuous catalytic regenerator reformer with its own dedicated reactor.

3. As discussed in the specification, conventional reforming processes have been operated as semiregenerative or cyclic processes using fixed bed reactors. During the catalytic reforming process, the activity of the catalyst gradually diminishes, principally because of the deposition of coke at the catalyst surface. It is therefore periodically necessary to carry out a regeneration operation by removing the coke by controlled oxidation, generally in the presence of air diluted with nitrogen followed by a rejuvenation step to redisperse the metals on the catalyst support. The rejuvenation step, typically an oxychlorination, also adjusts the acidity of the alumina support material by addition of chlorine or an organic chlorine-containing compound in an oxidizing medium.

4. In order to attain a cycle duration of reasonable length between successive rejuvenations, the semi-regenerative and cyclic reforming processes have operated at relatively high pressures, typically about 30-35 barg, at which the hydrogen produced by the reforming process reduces catalyst aging by reducing the rate of coke lay-down. While this expedient is desirable for prolonging catalytic activity, it unfortunately is less favorable for the equilibrium of the reforming process in which the forward dehydrogenation reactions are favored by low hydrogen partial pressure. Thus, the operation of the semi-regenerative and cyclic process has been in the nature of a compromise as far as catalyst cycle length and desirable reaction equilibrium are concerned.

5. The advent of the continuous catalytic reforming process enabled this trade-off between catalyst cycle length and reaction equilibrium to be resolved: by providing for the catalyst to be regenerated frequently, cycle length was no longer a determinant of process conditions: a faster rate of coke accumulation at a lower hydrogen pressure could be accepted and an improved equilibrium attained as a result of the lower hydrogen pressure. While this obviously made the continuous reforming process technically desirable, it did not lead to the immediate demise of the semi-regenerative and cyclic units which had already been installed and, in many cases, fully depreciated in their refinery economics. The underlying reason is that a continuous reforming unit is a major capital item, is expensive and often cannot be justified in times when refinery

profit margins have been as razor-thin as they have been in recent years in highly competitive product markets.

6. These economic factors were realized by the pioneer of the continuous reforming process, UOP. In NPRA Paper AM-89-47 ("Conversion of Fixed Bed Reformers to UOP CCR Platforming Technology, Golem et al), the authors imply in several instances that the replacement of a fixed bed unit by a full continuous reforming unit with its moving bed reactors and its own regenerator is significant and, for this reason, recommends a number of approaches in which some of the benefits of the fully continuous operation may be obtained without going to the higher cost of a complete unit replacement. Note, for example, on page 6:

"There are three avenues to obtaining some or all of the benefits of CCR Platforming technology...Each of the above options improves reforming efficiency; however, the improvements come with associated capital and utility costs."

"The conversion of an existing, fixed bed unit to CCR Platforming technology provides an *affordable* approach to gain many of the benefits of CCR Platforming without purchasing a new unit." [Emphasis added]

On page 8, reference is made to the fact that in spite of the clear-cut technical advantages of CCR Platforming, most refiners have opted for the partial conversions described in the article:

"Most of UOP's projects have resulted in conversions which range in cost from 25% to 50% of a new unit EEC."

7. Thus, it is clear that although the fully continuous reforming process exemplified by UOP's CCR Platforming™ and Axens Octanizing™ process technologies is technically superior both from the viewpoint of product yield and quality and catalyst performance, the economic factors in its refinery implementation provide an incentive for alternative solutions which, while less attractive from the technical point of view, represent better refining investment. The economic factors have therefore created a technical problem, namely, what shall the technical improvement at acceptable capital cost be?

8. The paper by Golem, cited above, describes three alternatives in the conversions of a fixed bed reformer unit to the UOP CCR technology, two of which are the full conversions to CCR with moving bed reactors and moving bed regenerators (first and

second generation CCR Platforming options, see page 6). Thus, UOP only offers one lower cost alternative to the conversion to a complete CCR, namely, the Hybrid CCR Platforming process. The Hybrid CCR Platforming conversion utilizes the existing fixed bed reactors and *adds* a final moving bed reactor with its own associated regenerator which is sized only for the new moving bed reactor (see page 6) although it appears that replacement of a fixed-bed reactor by the moving bed reactor may be contemplated (second paragraph, page 7). Note also the final paragraph on page 7 which states:

“If the revamp is the first step in a phased approach toward full CCR Platforming operations, the CCR regenerator is sized for use with the last moving bed reactor and a future reactor stack, which replaces the side-by-side reactors, or with a future reactor stack that replaces the entire reactor train. *The cost of the larger regenerator is significant and the project cost approaches that of a full CCR Platforming conversion.*”  
[Emphasis added]

Thus, it is the regenerator costs which are the most telling. As noted in the present application (0007), the cost of the regenerator can be as much as about 80 percent of the total cost required for the conversion.

9. The three conversion options reviewed by Golem are therefore:

- Hybrid conversion usually involving *addition* of a small moving bed reactor/regenerator combination following the existing fixed bed reactors (with a possibility of installing a larger regenerator for future full CCR utilization at significantly higher cost), but possibly a replacement. In any event, fixed bed reactors are retained in use *as fixed bed reactors* in this hybridized processing scheme.
- Full CCR conversion (i.e. to a moving bed reactor stack *and a moving bed regenerator* with its high associated regenerator costs), and
- Full CCR conversion, as above but using the second generation CCR technology with its lower operating pressure and faster catalyst circulation rate (pages 3, 14).

10. The faster catalyst circulation rate associated with the second generation CCR unit full conversion implies, of course, a larger regenerator the cost of which may be unattractive and unjustified (page 13).

11. This discussion of the options presented by Golem (referred to also in NPRA Paper AM-03-93 (NPRA 2003 Annual Meeting)) indicates that the problem of regenerator cost was still not resolved by those options: at the least, a moving bed regenerator had to be provided for the additional, final moving bed reactor. The first option described by Golem, the hybridizing option, is one which fails to overcome the inherent problems of the fixed bed unit since it retains the fixed bed reactors as fixed bed reactors.

12. The present invention has the objective of providing the technical advantages of complete moving bed reactor operation (lower hydrogen pressure, higher yield, improved product quality) while, at the same time, avoiding the costs associated with moving bed regenerator installation. It does this by installing moving bed reactors but not the associated regenerator. Instead, the catalyst is regenerated separately, either by resort to away-from-the reactor regeneration (usually an off-site operation) or by use of a shared regenerator which effectively reduces costs because of the economies of scale. This general scheme is set out in claims 1 and 18 (as currently amended) of the application, which have been amended to include the feature of claim 5, namely that each reactor of the unit is replaced by a moving bed reactor with catalyst and reactant flow taking place from one reactor to the next. As amended, claims 1 and 18 read (emphasis added):

1. A method for the conversion of a fixed-bed catalytic reformer unit to moving bed reactor operation, the method comprising:

converting each fixed bed reforming reactor of a fixed-bed catalytic reformer unit which includes a plurality of fixed bed reactors connected in a series train for reformer charge flow from one reactor to the next in the train to a moving-bed catalytic reformer reactor comprising a series train of moving bed reactors that allows continuous or intermittent addition of freshly regenerated catalyst to a catalyst inlet of the first moving-bed reactor of the series train and continuous or intermittent removal of spent catalyst from a catalyst outlet of the last moving-bed reactor of the series train, with each moving bed reactor connected in the train for reformer charge flow and for reforming catalyst flow from one reactor to the next in the train;

adding continuous or intermittent catalyst feeding facilities at the catalyst inlet of the moving bed reactor train for charging fresh or regenerated catalyst continuously or intermittently to the first continuous moving-bed

reactor through the catalyst inlet of the first reactor and feeding regenerated catalyst to the catalyst inlet of the first reactor in the train;

adding spent catalyst recovery facilities for collecting the spent catalyst from the catalyst outlet of the last moving bed reactor of the series train, and *transferring the spent catalyst to a reforming catalyst regeneration facility which is not integrated with the reactor train from which the catalyst is removed;*

*operating the moving-bed reactors at an effective pressure lower than the pressure at which the fixed bed reactor is operated before the conversion to improve reformate quality and yield relative to those of the reformate product from the fixed-bed unit before the conversion;*

*removing continuously or intermittently spent catalyst from the last moving-bed reactor of the series train; and transferring it to the non-integrated regeneration facility.*

18. A method for the conversion of a fixed-bed catalytic reformer unit to moving bed reactor operation, the method comprising:

converting each fixed bed reforming reactor of a fixed-bed catalytic reformer unit which includes a plurality of fixed bed reactors connected in a series train for reformer charge flow from one reactor to the next in the train to a moving-bed catalytic reformer reactor comprising a series train of moving bed reactors that allows continuous or intermittent addition of freshly regenerated catalyst to a catalyst inlet of the first moving-bed reactor of the series train and continuous or intermittent removal of spent catalyst from a catalyst outlet of the last moving-bed reactor of the series train, with each moving bed reactor connected in the train for reformer charge flow and for reforming catalyst flow from one reactor to the next in the train;

adding continuous or intermittent catalyst feeding facilities at the catalyst inlet of the moving bed reactor train for charging fresh or regenerated catalyst continuously or intermittently to the first continuous moving-bed reactor through the catalyst inlet of the first reactor and feeding regenerated catalyst to the catalyst inlet of the first reactor in the train;

adding spent catalyst recovery facilities for collecting the spent catalyst from the catalyst outlet of the last moving bed reactor of the series train, and transferring the spent catalyst to a reforming catalyst regeneration facility which is not integrated with the reactor train from which the catalyst is removed;

*operating the moving-bed reactors at an effective pressure to improve reformate quality and yield relative to those of the reformate product from the fixed-bed unit before the conversion;*

*removing continuously or intermittently spent catalyst from the last moving-bed reactor of the series train; and transferring it to the non-integrated regeneration facility.*

Claim 20 defines the conversion in which all the former fixed bed reactors are removed and replaced by the moving bed reactors but the regeneration is carried out in a non-integrated (shared) regenerator:

20. A method for the conversion of a fixed-bed catalytic reformer unit to moving bed reactor operation, the method comprising:

converting at least the reactors of a fixed-bed catalytic reformer unit having a plurality of sequential fixed-bed catalytic reforming reactors to a moving-bed catalytic reformer unit with a plurality of sequential moving bed reforming reactors in which each moving bed reactor is connected in a series train of moving bed reactors for reformer charge flow and for reforming catalyst flow from one reactor to the next in the train;

adding continuous or intermittent catalyst feeding facilities at the catalyst inlet of the first moving bed reactor in the sequence of moving bed reactors in the train for charging fresh or regenerated catalyst continuously or intermittently to the continuous moving-bed reactor through the catalyst inlet of the first reactor and feeding regenerated catalyst to the catalyst inlet of the first reactor in the train;

adding spent catalyst recovery facilities for collecting the spent catalyst from the catalyst outlet of the last moving bed reactor in the train of moving bed reactors, and *transferring the spent catalyst to a reforming catalyst regeneration facility which comprises a reforming catalyst regenerator which is integrated with a second moving bed catalytic reforming unit but is not integrated with the moving bed reactor from which the catalyst is removed;*

operating the moving-bed reactor at an effective pressure within the range of 345 to 2760 kPag and *lower than the operating pressure of the fixed bed reactors unit before conversion* to improve reformat quality and yield relative to those of the reformat product from the fixed-bed unit before the conversion;

*removing continuously or intermittently spent catalyst from the last moving-bed reactor in the train; and transferring it to the regenerator, regenerating the catalyst in the regenerator and returning regenerated catalyst to the first moving bed reactor of the train of moving bed reactors in the converted unit.*

13. These unit "conversion" options are not described or taught by Golem. As noted above, Golem only deals with unit conversion options in which an integrated moving bed

regenerator of some size, small or large, is installed and used in combination with the moving bed reactor(s). Thus, Golem's conversions to fully continuous operation (the second and third options) are always associated with the cost of a full-size, fully integrated moving bed regenerator. The only conversion option which is not a complete conversion is the hybridizing option in which the fixed bed reactors are retained as such but with the addition of a moving bed regenerator but this option remains mostly a fixed bed unit with the disadvantages of that type. The present invention, replacing the fixed bed reactors with moving bed reactors, enables the advantages of moving bed operation to be secured in large measure, limited only by the intermediate pressure chosen to reduce the catalyst circulation rate. The present conversion option, however, has the definite advantage that if a later decision is made, at a more economically opportune time, to install the matching regenerator, the moving bed reactors are ready for integration into the full moving bed unit.

14. Golem does refer in passing to a conversion scheme in which complete reactor replacement appears to be contemplated. On page 6, the article states the following:

"Even if a CCR Platforming project is not necessary at present, any refiner facing replacement of side-by-side reactors should consider replacement with a moving bed reactor stack (operating in semi-regenerative mode) as the first step toward full CCR Platforming conversion in the future."

While this type of conversion certainly achieves equipment installation, it does not achieve any measure of moving bed advantage: the moving bed reactors are there but they are used "in semi-regenerative mode". This means that the catalyst remains in the reactors which function as fixed bed reactors and the process conditions used are those which are necessarily appropriate to fixed bed operation, including the high pressures needed for adequate cycle duration between regenerations. Thus, this conversion scheme fails to achieve any immediate advantage from the process point of view; all it does is increase the current capital cost for fixed bed operation although with the prospect of spreading out the cost of a total conversion. Current operation, however, benefits not at all since the unit continues to operate in fixed bed mode.

15. In making the rejection under 35 USC 103, the Examiner characterizes the Golem reference as disclosing:



"[A] process in which a fixed bed catalytic reformer unit is revamped so that at least one of the fixed bed reactors is converted to a moving bed reactor. All the fixed bed reactors may be converted to moving bed reactors. The moving bed reactor requires catalyst feeding and recovery facilities. A catalyst regenerator is also added to the unit. By performing this revamping, the resulting product from the reactor has improved quality and yield as compared to the product from the fixed bed unit. The revamped unit is operated at lower pressures (i.e. 100 psi vs. 300 psi or 690 kPa vs. 2608 kPa)...The revamp in the manner disclosed by Golem is believed to result in a unit that is operated as claimed."

This assertion needs closer examination, yielding the conclusions set out below.

16. The beginning seems at first sight, to be fairly innocuous: "[A] process in which a fixed bed catalytic reformer unit is revamped so that at least one of the fixed bed reactors is converted to a moving bed reactor. All the fixed bed reactors may be converted to moving bed reactors." Here, however, it is pointed out that the "Hybrid" option involves the addition of a moving bed reactor/regenerator set to the existing fixed bed unit so that, in normal terms, there is hardly a "conversion" of one or more reactors – the reactors are not replaced, they are retained and continue to function in their former manner as fixed-bed reactors. By contrast, in the present conversion scheme, all the fixed bed reactors are replaced by moving bed reactors so that the converted unit is a true moving bed reactor unit with cocurrent reactant and catalyst flow from one reactor to the next. The two full conversion options described by Golem, of course, entail "conversion" of the fixed bed reactors to moving bed reactors, *but with the addition of a full size integrated regenerator* so that the claim requirement of the catalyst being transferred to a non-integrated regeneration facility (claims 1, 18) is not met; neither is the claim 20 requirement of using a shared regenerator.

17. The only option referred to in Golem where fixed bed reactors are "converted" to moving bed reactors is the one discussed in Section 13 above, in which a moving bed reactor stack is installed but operated in "semi-regenerative mode" which, as noted above, is as fixed beds with the catalyst remaining in place. When this is done, the reactors in the stack are not operated as set out in claims, that is, with regenerated catalyst being fed to the catalyst inlet of the first reactor in the train and catalyst withdrawn from the last reactor in the train. In the Golem "new reactor stack, semi-regenerative mode" operation, the catalyst does not move (as required by the present

claims) and a pressure reduction is not necessarily undertaken since the unit still has to operate with extended cycle duration consistent with its actual status as a semi-regenerative unit, albeit in a stacked configuration.

18. The Dufresne patent (U.S. 5,854,162) relates to a process for the regeneration of a used hydrocarbon treatment catalyst which may be a reforming catalyst (abstract, column 1, lines 15-17, column 3, lines 31-35). In discussing the regeneration of reforming catalysts, Dufresne, notes the following:

"When the catalytic reforming process is a continuous catalytic reforming (CCR) process, the catalyst progressively flows (circulating bed) through a number of reaction zones in which the feed circulates and where the chemical reactions associated with catalytic reforming take place, following which it is extracted from the final reaction zone and directed towards a regeneration zone. The duration of a (reaction+regeneration) cycle for the catalyst is generally in the range 0.1 to 10 days. .... Finally in this case, the catalyst is regenerated in a zone which is distinct from the reaction zones but in direct contact therewith."

"When the reforming reaction is a semi-regenerative type process (also known as a fixed bed process), the catalyst is present in reaction zones through which the feed circulates, but the catalyst does not circulate from one reaction zone to another while the chemical reactions associated with catalytic reforming are taking place. In this case, regeneration is periodically carried out, generally for 7 to 10 or 15 days every 3 months to 12 months of use depending on the severity of the operations. The catalyst remains in the reaction zone which becomes the regeneration zone. .... Thus in this case the catalyst is regenerated in a zone which is also the reaction zone."

"There are also cases where the catalytic reforming process is a mixed technology process, i.e., one process combines reaction zones with semi-regenerative technology with reaction zones with continuous technology. In this case, the two types of regeneration are thus used."

The Dufresne regeneration process is stated to have, as its objective, the provision of

"[O]ffsite regeneration methods for used catalytic reforming catalysts which produce technical results which are at least as good and normally better than conventional onsite regeneration processes for catalytic reforming catalysts which are currently in use."

"A further aim of the invention is to provide offsite regeneration methods for any used catalyst for the treatment of hydrocarbons containing at least one precious metal, preferably platinum, and in which regeneration must comprise at least one coke combustion step and one oxyhalogenation

step, preferably oxychlorination, to redisperse the precious metal. The regeneration treatment of the invention can eliminate the major portion of the coke deposited on the support and redisperse the metallic phase."

19. The Dufresne process is therefore regarded correctly as an offsite reforming catalyst regeneration process (column 3, line 31; column 4, line 33) which is characterized by two offsite steps of combustion and oxychlorination carried out under specific conditions (column 3, lines 57-67). The spent catalyst which may be regenerated by this process may be "from a continuous and/or semi-regenerative type reforming process, i.e., a continuous type, semi-regenerative type or mixed type process." (column 4, lines 16-19). When dealing with the catalyst from a continuous reforming process, which is the type to which the present process approximates after unit conversion, Dufresne makes it clear that the off-site regeneration is intended to deal with upset conditions (column 2, lines 44-59):

Regeneration in a CCR type process is directly affected by events in the reaction zones, and any abnormal operation of these zones has a direct effect on the operation of the regeneration zone, since the regeneration zone is generally only programmed for operation using normal conditions. Thus any dysfunction, which manifests itself in a rise in the coke content in the catalyst to be regenerated compared with the normal content, generally 4% to 5% by weight of coke, requires either the catalyst regeneration rate to be reduced to avoid considerable exothermicity problems in the regeneration zone, meaning in total a reduction in the feed flow rate and thus a reduction in the production of the unit, which is costly to the refiner; or the catalyst must be completely changed and the used catalyst (if it cannot be re-used) given to a platinum recovery company. Further, coke combustion may be incomplete.

20. Dufresne does not contemplate, therefore, that the described regeneration process is to be used as the normal, regularly used, catalyst regeneration technique, either with the continuous type process or, for that matter, the Golem hybrid type process (see Dufresne column 2, lines 34-39). This is, in fact, in line with a more generalized consideration, that off-site regeneration as described by Dufresne is suitable for regeneration of the catalyst from a semi-regenerative unit in the normal way or, when used for the catalyst from a continuous unit, is not intended to be a regular adjunct to the reforming process: it is only intended (and is so described) as an expedient to be utilized only when an upset has occurred. From this it follows that in a continuous catalytic reforming process such as CCR Platforming, the Dufresne reference contemplates that

the catalyst will be regenerated in the conventional *dedicated, integrated* regenerator in normal day-to-day operation. There is no suggestion in Dufresne that the catalyst should be transferred during normal continuous operation to a non-integrated regeneration facility, as required in claims 1 and 18.

21. Dufresne also deals only with the case where the reformer is an original semi-regenerative unit or a full CCR unit, not with a regenerator-free unit of the type referred to in the present claims which is operated under an intermediate pressure regime (see claims 1 and 18) which is low enough to secure the advantages of the CCR operation in terms of reformat yield and quality and high enough for the catalyst circulation rate to be maintained at a manageable level. Claims 8 and 19, as amended, specify that the modified unit is operated at a pressure within the range of 1035 to 22620 kPag (150 to 380 psig) and at a value which is lower than that of the fixed bed reactor before conversion. Claim 11 also specifies a reduced pressure relative to the regime prior to conversion. This mode of conversion and operation is neither described nor suggested by Dufresne nor Golem nor by a combination of the two. Dufresne, insofar as it contemplates operating pressures for a CCR unit, would at the most, only contemplate operation at the pressures characteristic of a CCR unit, that is, at the lower pressures taught by Golem, which works at the lower pressure CCR regime such as 50 or 100 psig (Golem, pages 15 and 16).

22. With respect to claim 20, Dufresne contains no suggestion that the spent catalyst should be regenerated in a regenerator which is integrated with a second moving bed unit which is not integrated with the first unit, as set out in this claim. As pointed out above and in the specification, the economies of scale are significant when dealing with the regenerator: a regenerator of twice the size does not cost twice as much and there is therefore a significant advantage to using a regenerator as a shared facility between two or more units. In fact, Dufresne is to the contrary: Dufresne would not carry out the described regeneration in a regenerator which is integrated any reactor stack: the Dufresne regeneration is carried out in an off-site regenerator equipped with thin layer furnaces such as rotolouvre or belt furnaces (column 5, lines 59-62). Neither Golem nor Dufresne has any foreshadowing of the different conceptual approach of shared facility-regeneration nor could this concept as embodied in the claim be derived from these two

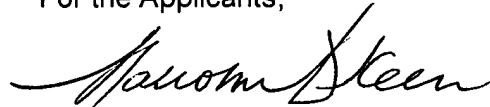
teachings. The same applies to claim 4 which is a dependent claim covering this feature.

23. In sum, therefore, the combined Golem and Dufresne references fail to render the present unit conversion or modification scheme obvious: Dufresne did not contemplate operation of a CCR unit without a conventionally attached regenerator and Golem did not contemplate unit conversion or modification without using a conventionally attached continuously regenerator. Neither Dufresne nor Golem suggested operation of a converted unit at an pressure intermediate the former fixed bed unit and the converted moving bed unit.

24. Applicants' attorney apologizes for the failure to enclose the list of cited references with the Information Disclosure Statement of 4 August 2004; this appears to be the only deficiency among those cited. A proper listing is attached. It is assumed in passing that the Golem reference cited by the Examiner, is NPRA Paper No. AM 89-47 which was cited in the Disclosure Statement since complete identification was not provided in the PTO-892 accompanying the office action. A copy of the Dutta reference is enclosed. Again, applicants' attorney apologizes for the deficiencies. With the correction of these formalities, acknowledgment of consideration of the cited references is requested.

25. In view of the remarks and amendments set out above, reconsideration of the rejections is requested.

For the Applicants,



Attorney for Applicant(s)

Registration No. 27,728

Telephone Number: (703) 846-7795

Facsimile Number: (703) 846-7799

☐ Pursuant to 37 CFR 1.34(a)

ExxonMobil Research and Engineering Company  
P. O. Box 900  
Annandale, NJ 08801-0900